Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	IB Docket No. 16-185
2019 World Radiocommunication Conference Advisory Committee	)	

COMMENTS OF T-MOBILE USA, INC.

T-Mobile USA, Inc. ("T-Mobile")[1/] submits the following in response to the Public Notice issued by the International Bureau, seeking comments on the draft recommendations (the "Recommendations") of the World Radiocommunication Conference Advisory Committee ("WAC") and the draft proposals (the "Proposals") provided by NTIA on several issues that will be considered at the 2019 World Radiocommunication Conference ("WRC-19").[2/] In order to most effectively promote Fifth Generation ("5G") technology and services domestically and abroad, the Commission should adopt recommendations that support its own regulatory actions and priorities and promote international spectrum harmonization.

I. INTRODUCTION

Decisions made at WRC-19 will be critical to spectrum used by U.S. consumers, businesses, service providers, and manufacturers. Consumer demand for wireless broadband has increased dramatically,[3/]and that trend will continue. That development – and the corresponding demand for wireless network capacity – will continue to drive the need to identify spectrum

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1/ T-Mobile USA, Inc. is a wholly owned subsidiary of T-Mobile US, Inc., a publicly traded company.

2/ *International Bureau Seeks Comment on Recommendations Approved by World Radiocommunication Conference Advisory Committee*, Public Notice, DA 18-1017 (rel. Oct. 3, 2018) ("*Public Notice*").

3/ ACCENTURE, HOW THE WIRELESS INDUSTRY POWERS THE U.S. ECONOMY 6 (2018), https://api.ctia.org/wp-content/uploads/2018/04/Accenture-Strategy-Wireless-Industry-Powers-US-Economy-2018-POV.pdf.

available for wireless services. As described below, the Commission has taken action domestically to address these spectrum needs and to ensure that spectrum is made available to support 5G networks. The Commission should ensure that its recommendations, as part of the preparation for WRC-19, support those domestic efforts.

But WRC-19 decisions will not be merely about spectrum designated in the U.S. for wireless networks. WRC-19 will identify spectrum for mobile use pursuant to an International Mobile Telecommunications ("IMT") designation, facilitating *worldwide* harmonization of spectrum for wireless networks. Global spectrum harmonization will promote innovation and investment because of efficiency-producing economies of scale and scope. The U.S. positions at WRC-19 should therefore reflect these twin goals of spectrum management – preserving the domestic utility of spectrum bands that the Commission has identified for terrestrial wireless use and promoting consistent international use of that spectrum in order to promote the global harmonization that will make its use more commercially attractive.

II. DISCUSSION

A. Document WAC/063 (01.10.18) – Agenda Item 1.13 – Identification of Frequency Bands for the Future Development of IMT.

Agenda Item 1.13 considers the identification of frequency bands – including the 47.2-50.2 GHz band – for the future development of IMT,[4/] in accordance with Resolution 238.[5/] The 47.2-50.2 GHz band is shared on a co-primary basis among fixed, fixed satellite service ("FSS"), and mobile services.

T-Mobile strongly supports Commission adoption of WAC View B of this Document,

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4/ Resolution 238 (WRC-15), https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000C0014PDFE.pdf.

5/ *Public Notice*, Attachment A at 3.

which would add an IMT identification to the entire 47.2-50.2 GHz band, while preserving administrations' ability to designate the band for other purposes. In the U.S., the Commission has already taken the important step of authorizing the 47.2-48.2 GHz band for Upper Microwave Flexible Use Services ("UMFUS").[6/] In preparing to auction the band and to provide consistency across the UMFUS bands, the Commission recently proposed to modify the band plan for the 47.2-48.2 GHz band from 200 to 100 megahertz channels.[7/] And Chairman Pai has announced plans to auction the 47.2-48.2 GHz band in 2019.[8/]

The 47.2-48.2 GHz band is therefore positioned to play a critical role in the deployment of 5G services using millimeter wave spectrum in the U.S. The benefit of using this spectrum domestically for terrestrial broadband operations can most effectively be realized by harmonizing the allocation of the full band internationally. View B explains that "[a] global identification for IMT in 47.2-50.2 GHz would allow each country/region to assign spectrum for IMT consistent with their domestic use and priorities, while still facilitating the benefits of economies of scale for businesses and consumers."[9/] Designating mobile use within that tuning range will expand the scope and number of devices using that spectrum, promoting economies of scope and scale, even if the precise sub-bands within the spectrum are not identical for IMT use for every administration.

6/ *See Use of Spectrum Bands Above 24 GHz For Mobile Radio Service, et al.*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd 10988, ¶ 47 (2017) ("*Spectrum Frontiers Second Report and Order*"). The 48-2-50.2 portion of the band is reserved for FSS operations. *Id.* ¶ 189.

7/ *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, et al.,* Fourth Further Notice of Proposed Rulemaking, FCC 18-110 (rel. Aug. 3, 2018).

8/ Statement of Chairman Ajit Pai, *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services,* Fourth Further Notice of Proposed Rulemaking, FCC-18-110 (rel. Aug. 3, 2018).

9/ *Public Notice*, Attachment A at 15.

In contrast, View A states that any IMT designation of the 47.2-48.2 GHz portion of the band should be conditioned on a series of technical limitations.[10/] These proposed conditions to the international designation of the band will create unnecessary constraints on its use by terrestrial systems. Proponents of this approach envision an outcome where these technical and operational measures are universally applicable. But this outcome is unnecessary. The better approach – expressed in View B – is that administrations would be free to establish their own use of the band with their own technical regulations. The technical and operational constraints that would be imposed by View A would specify rigid solutions where none are required, while removing flexibility that exists today. Worse, now that Chairman Pai has signaled his intent for the Commission to auction the 47.2-48.2 GHz band, a U.S. position that supports imposing limits on use of the band may dampen the interest in the band among auction participants.

B. Document WAC/065 (01.10.18) – Agenda Item 1.14 – Appropriate Regulatory Actions for High-Altitude Platform Stations.

This Agenda Item considers the appropriate actions for high altitude platform stations ("HAPS") within existing fixed service allocations.[11/] T-Mobile supports the WAC View B of this Document. View B provides an approach that ensures fixed and mobile services are protected, based on the recognition that the bands under consideration for HAPS overlap with those that may be designated for IMT. Domestically, the Commission has been asked to consider designation of spectrum for a HAPS-like service proposed by Elefante Group, Inc. ("Elefante").[12/] Elefante's request would particularly affect UMFUS use of the 26 GHz band.

10/ *Id.* at 5.

11/ *Id.* at 20.

12/ Petition of Elefante Group, Inc. for Rulemaking to Modify Parts 2 and 101 of the Commission's Rules to Enable Timely Deployment of Fixed Stratospheric-Based Communications Services in the 21.5-23.6, 25.25-27.5, 71-76, and 81-86 GHz Bands, RM-11809 (filed May 31, 2018) (petitioning to establish its Stratospheric-Based Communications Services); *Use of Spectrum Bands Above 24 GHz For Mobile*

As T-Mobile and others have pointed out, designation of spectrum for HAPS is inappropriate and contradictory to use of the same spectrum for UMFUS.[13/] Moreover, the need and demand for stratospheric communications, like HAPS, is speculative, compared to the demonstrated need and demand for terrestrial mobile services. HAPS may, at best, serve only a niche market. In contrast, the demand for terrestrial mobile broadband is increasing at an exponential rate.[14/] Constraining terrestrial use of the band would not serve the public interest domestically or internationally.

A U.S. proposal that supports any spectrum designation for HAPS is therefore premature at this time. The proposed HAPS services are untested, and currently, there is no information available on the technical characteristics of the systems, much less any information on how in-band fixed and mobile services would be protected.[15/] With respect to the 26 GHz band in particular, there is no evidence that HAPS can be deployed without harming terrestrial mobile use. And the proponent of its use, Elefante, will not have a prototype airship to test until late 2020. Designating additional spectrum for HAPS could compromise existing, proven services in these bands. To preserve the work completed domestically and internationally for future IMT systems, compatibility studies between terrestrial mobile services and HAPS must be completed

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Radio Services, et al., Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, FCC-18-73, ¶¶ 85-87 (rel. Jun. 8, 2018).

13/ *See, e.g.*, Reply Comments of T-Mobile USA, Inc., GN Docket No. 14-177, *et al.*, at 16-17 (filed Sept. 28, 2018); Reply Comments of United States Cellular, GN Docket No. 14-177, *et al.*, at 6 (filed Sept. 28, 2018); Reply Comments of CTIA, GN Docket No. 14-177, *et al*., 5-8 (filed Sept. 28, 2018); Comments of T-Mobile USA, Inc., GN Docket No. 14-177, *et al.*, at 18-19 (filed Sept. 10, 2018); Comments of AT&T, GN Docket No. 14-177, *et al.*, at 13-15 (filed Sept. 10, 2018); Opposition of T-Mobile USA, Inc., RM-11809 (filed July 11, 2018); Opposition of CTIA, RM-11809, at 2 (filed July 11, 2018).

14/ *See State of Wireless 2018*, CTIA, https://api.ctia.org/wp-content/uploads/2018/07/CTIA_State-of-Wireless-2018_0710.pdf.

15/ *Public Notice*, Attachment A at 57.

before any further action is taken domestically or internationally.

C. Document WAC/068 (01.10.18) – Agenda Item 1.5 – Frequency Bands by Earth Stations in Motion.

This Agenda Item considers the use of, among others, the 27.5-29.5 GHz band by earth stations in motion ("ESIMs"). The 27.5-29.5 GHz band is shared on a co-primary basis among fixed, FSS, and mobile services.

T-Mobile supports the WAC View B of the Document. View B provides an approach that will provide adequate protection to terrestrial operations in the band from ESIMs. As the Commission is aware, the 27.5-28.35 GHz band (the "28 GHz band") has been designated for mobile terrestrial use, and the Commission plans to begin an auction for licenses in the band on November 14, 2018.[16/] As with other bands, the Commission should not adopt any position that would disturb the use of the band under the recently adopted U.S. rules. Instead, any footnotes added to the Radio Regulations and any WRC Resolution must adequately protect the UMFUS operations that will be deployed in the 28 GHz band.

D. NTIA Proposal – Document WAC/062 (06.09.18) – Agenda Item 1.13 – Identification of Frequency Bands for the Future Development of IMT.

WRC-15 invited the International Telecommunications Union ("ITU") to conduct sharing and compatibility studies on the spectrum needs for IMT in the bands between 24.25 GHz and 86 GHz.[17/] And the WRC-15 identified 31.8-33.4 GHz ("32 GHz"), 45.5-47 GHz, and 47-47.2 GHz bands as frequencies that may require additional mobile service allocations on a primary basis.[18/]

16/ *Auctions of Upper Microwave Flexible Use Licenses for Next-Generation Wireless Services; Comment Sought on Competitive Bidding Procedures for Auctions 101 (28 GHz) and 102 (24 GHz); Bidding in Auction 101 Scheduled to Begin November 14, 2018*, Public Notice, FCC 18-43 (rel. Apr. 17, 2018).

17/ Resolution 238 (WRC-15), https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000C0014PDFE.pdf.

18/ *Id.*

As a result of sharing and compatibility studies between IMT systems and radionavigation services ("RNS") in the 32 GHz band, NTIA does not recommend allocating the 32 GHz band for mobile service on a primary basis for the future development of IMT.[19/]

T-Mobile disagrees with NTIA's conclusions that the U.S. position should be that terrestrial operations in the 32 GHz band cannot coexist with RNS. This band remains under consideration for UMFUS use in the U.S. as part of the FCC's *Spectrum Frontiers* proceeding.[20/] In that proceeding, T-Mobile demonstrated, via technical analysis, that terrestrial mobile operations can coexist with other services in the 32 GHz band by adopting modest operating constraints on new 5G broadband services, such as exclusion or coordination zones.[21/] T-Mobile expects that further analysis of potential co-existence between RNS and UMFUS will occur in the context of that proceeding. It is therefore unreasonable for NTIA to suggest that the U.S. should dismiss the notion of coexistence between IMT and RNS based on the ITU studies.

T-Mobile notes that other bands subject to this Document also remain under consideration by the WAC and it looks forward to providing input to the WAC on the use of those bands. The U.S. position concerning these bands should be informed by the Commission's more complete analysis of the spectrum.

E. NTIA Proposal – Document WAC/074 (21.09.18) – Agenda Item 1.13 – Identification of Frequency Bands for the Future Development of IMT.

In this Document, NTIA recommends that the U.S. support ITU adoption of a resolution

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19/ NTIA also states that the lack of studies performed on the 45.5-47 GHz and 47-47.2 GHz bands demonstrates no interest in the bands for IMT. *Public Notice*, Attachment B at 16.

20/ *Spectrum Frontiers Second Report and Order*, n. 35 ("We will not act on the 32 GHz, 42 GHz, or 50 GHz bands at this time. . . . The record on these bands and issues remains open, and we will act on those bands and issues in a future phase of this proceeding.").

21/ *See* Letter from Steve Sharkey, Vice President, Government Affairs, Technology and Engineering Policy, T-Mobile USA, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14- 177, *et al.* (filed Oct. 2, 2017).

governing the 24.25-25.5 GHz band (the "24 GHz band") that would establish limits on unwanted emissions from the band. It does not recommend any changes to the proposals for the 37-40.5 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz, and 81-86 GHz bands.[22/] WRC-15 invited the ITU to examine these bands as part of Resolution 238, and all of the bands included in this proposal already have primary mobile allocations.

T-Mobile strongly opposes NTIA's recommendation governing the 24 GHz band. The Commission is about to initiate an auction of the 24 GHz band.[23/] Even though NTIA supports IMT in the 24 GHz band, the proposed allocation would be hampered by international standards that would impose severe restrictions on deployments that are inconsistent with the rules that the Commission has already adopted for this band.[24/] The U.S. should not advocate international use of the band that is inconsistent with the U.S. regulatory approach. In this proceeding, if the NTIA's proposal is adopted internationally, and the Commission is inclined to conform U.S. regulations to the international approach, it would undermine the rules under which it will have just concluded an auction, disturbing investment-backed expectations.

Three of the other bands specified in this document – the 37-40.5 GHz, 47.2-50.2 GHz, and 50.4-52.6 GHz bands – either are, in whole or in part, under consideration or have already been designated by the Commission for UMFUS.[25/] And the Commission will also auction at

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22/ *Public Notice*, Attachment B at 50-55.

23/ *See Auctions of Upper Microwave Flexible Use Licenses for Next-Generation Wireless Services; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auctions 101 (28 GHz) and 102 (24 GHz); Bidding in Auction 101 Scheduled to Begin November 14, 2018,* Public Notice, FCC 18-109 (rel. Aug. 3, 2018).

24/ *Spectrum Frontiers Second Report and Order*, ¶ 22; 47 CFR § 30.4(a).

25/ *Use of Spectrum Bands Above 24 GHz For Mobile Radio Service, et al.*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, ¶¶ 76, 105 (2016) ("*Spectrum Frontiers Report and Order*") (authorizing the 37-38.6 GHz and 38.6 GHz bands for UMFUS); *Spectrum Frontiers Second Report and Order*, ¶ 47 (authorizing the 47.2-48.2 GHz band for UMFUS); *Spectrum Frontiers*

least the spectrum between 37.6-40 GHz within the next year.[26/] Any recommendations that NTIA makes must take those Commission actions and proposals into consideration.

III. CONCLUSION

T-Mobile appreciates the opportunity to continue to participate in the ongoing preparation for WRC-19. In order to ensure the greatest opportunity for deployment of 5G services and technologies, U.S. positions must conform to domestic decisions and policies and promote international use of spectrum that conforms to those decisions in order to promote spectrum efficiency and international harmonization.

Respectfully submitted,

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Report and Order, ¶ 420 (proposing to authorize fixed and mobile operations in the 50.4-52.6 GHz band under the UMFUS rules).

[26/] Statement of Chairman Ajit Pai, *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services,* Fourth Further Notice of Proposed Rulemaking, FCC 18-110 (rel. Aug. 3, 2018).